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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/532,546	04/22/2005	Tetsunori Itabashi	7217/71164	3808
530 7590 12/30/2008 LERNER, DAVID, LITTENBERG, KRUMHOLZ & MENTLIK 600 SOUTH AVENUE WEST WESTFIELD, NJ 07090				
EXAMINER SAUNDERS JR, JOSEPH				
ART UNIT 2614		PAPER NUMBER		
MAIL DATE 12/30/2008		DELIVERY MODE PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/532,546

**Applicant(s)**

ITABASHI ET AL.

**Examiner**

Joseph Saunders

**Art Unit**

2614

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 November 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 7-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 7-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 April 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/5508)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 24, 2008 has been entered. Claims 7 – 9 are currently pending and considered below.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 7 – 9 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The new limitation of claim 7 now recites "noise canceling signal" however the specification as originally filed did not describe canceling noise. The specification does describe canceling "leakage". Therefore, the Examiner will interpret the limitation for examination purposes as "leakage canceling signal".

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 7 – 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bienek et al. (WO 02/078388 A2), hereinafter Bienek, in view of Kunugi et al. (US 4,868,878), hereinafter Kunugi.

**Claim 7:** Bienek discloses a reproducing apparatus for reproducing an audio signal (apparatus to create a sound field), comprising:

a first plurality of digital filters (delay means 1508 or adjustable digital filter can also be arranged to apply delays) each supplied with an audio signal (input signal 101);

a second plurality of digital filters (adjustable digital filter means 1512) each supplied with the audio signal (input signal 101);

a speaker array (DPAA) in a configuration in which plurality of speakers (output transducers 104) are arranged, in which signals representative of outputs of the first plurality digital filters are delivered to the respective plurality of speakers to form a sound field (Figure 7C and Figure 8);

in which predetermined delay times are set at the first plurality of digital filters so that respective propagation times required until the audio signal arrives at a first point

within the sound field through the first plurality of digital filters and the respective plurality of speakers coincide with each other (Figure 7C and Figure 8), and

in which predetermined transfer characteristics (coefficients and Figures 11A – 11D) are set at the second plurality of digital filters to control sound at a second point within the sound field among sounds formed from outputs of the first plurality of digital filters (Figure 7C and Figure 8) (Bienek teaches that “one or the other of the signal delay means (1508) and adjustable digital filter (1512) may also be dispensed with,” Page 18 Lines 15 – 30. Bienek further teaches that the outputs of multiple Distributors can be combined by adders before reaching the DPAA, Figure 15. Therefore one of the Distributors in Figure 15 could be configured as taught by Bienek to include only signal delay means (1508) and the other configured to include only adjustable digital filter means (1512). The outputs of each distributor are then combined through the use of adders and provided to the same speaker array resulting in for example Figure 8 where sound is directed in directions (B1), (B2), and (B3)).

Bienek does not disclose a plurality of subtraction circuits respectively supplied with the outputs of the first plurality of digital filters and outputs of the second plurality of digital filters and operable to perform respective subtraction operations therebetween, in which signals representative of outputs of the plurality of subtraction circuits are respectively delivered to the plurality of speakers,

in which predetermined transfer characteristics are set at the second plurality of digital filters to control sound at a second point within the sound field among sounds

formed from outputs of the first plurality of digital filters so as to cause a cancelling sound wave to be produced,

wherein a signal channel and corresponding noise canceling signal based on the signal channel are supplied to the same speaker.

Bienek does disclose reducing "side lobes" of the sound beams by providing a window function to improve directivity. Kunugi teaches another method than just reducing "side lobes" or "leakage" it eliminates the unintended sound wave at the listening point in the sound field. Kunugi explains, "In accordance with the above and other objects, the invention provides a sound field correcting system in which, in order to eliminate the effects of reflected sound waves in the sound field, the original signal is added to a signal which is obtained by varying the characteristic of the original signal to form a loudspeaker driving signal, thereby to make the frequency characteristic of the composite sound signal received at the listening point essentially flat. More specifically, in a sound field correcting system of the invention, a signal obtained by adjusting the level and delay of the original signal is superposed on the original signal to obtain a signal for driving the loudspeaker, thereby to eliminate the effect of the reflected sound wave at the listening point in the sound field," Column 3 Lines 41 – 55. Kunugi teaches implementing the sound field correcting system using a circuit as shown for example Figures 7, 9, and 12 making note of the inverter or subtraction operation.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the circuit of Bienek, as taught by Kunugi, to add to the original channel signal a signal obtained by varying the characteristics of the original

channel signal to form a loudspeaker driver signal, thereby eliminating the unintended sound components responsible for excess reverberation, poor channel separation, and irregular frequency characteristics (Kunugi Column 3 Lines 16 - 31), the elimination resulting in improved directionality of the surround signal in the system of Bienek.

**Claim 8:** Bienek and Kunugi disclose the reproducing apparatus for reproducing an audio signal as set forth in claim 7, and Bienek further discloses wherein a primary sound wave ((B2) or (B3)) resulting from the signal channel ("B2 represents a right surround (right rear speaker in a conventional systems) sound channel and beam B3 represents a left sound channel," Page 24 Lines 10 – 15) supplied to the speaker is reflected on a wall surface, and arrives at the first point ((X), Figure 8).

**Claim 9:** Bienek and Kunugi disclose the reproducing apparatus for reproducing an audio signal as set forth in claim 8, and Bienek further discloses wherein the second point is at substantially the same location as the first point (The different sound beams (B1), (B2), and (B3) are all directed to substantially the same point of the listener (X), Figure 8).

### ***Response to Arguments***

6. Applicant's arguments with respect to claims 7 – 9 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Saunders whose telephone number is (571) 270-1063. The examiner can normally be reached on Monday - Thursday, 9:00 a.m. - 4:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Kuntz can be reached on (571) 272-7499. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. S./  
Examiner, Art Unit 2614  
/CURTIS KUNTZ/  
Supervisory Patent Examiner, Art Unit 2614